Air Quality Permitting
Statement of Basis

May 5, 2006

Tier II Operating Permit and Permit to Construct
No. T2-050413

Glanbia Foods, Inc.
Richfield Facility

Facility ID No. 063-00003

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
IDAPA	A numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Available Control Technology
MMBtu	Million British thermal units
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM_{10}	Particulate Matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO_2	sulfur dioxide
T/yr	Tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.400 through 410, and 200 through 228, Rules for the Control of Air Pollution in Idaho (Rules) for issuing Tier II operating permits and Permits to Construct, respectively.

2. FACILITY DESCRIPTION

The Glanbia Foods Richfield facility (Glanbia Richfield) processes whey into lactose products, whey protein concentrate, and Provon (high protein content whey concentrate). Whey is processed through filtration; the products are dried in baghouse dryers and packaged on-site.

3. FACILITY / AREA CLASSIFICATION

This facility is classified as a minor facility because its potential to emit is less than major source thresholds without requiring limits on its potential to emit. The facility SIC code is 2023 (dry, condensed, and evaporated dairy products). The AIRS classification is "B".

The facility is located within AQCR 63 and UTM zone 11. The facility is located in Lincoln County which is classified as unclassifiable for all regulated criteria pollutants (PM_{10}, CO, NO_x, SO_2, lead, and ozone).

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at Glanbia Richfield. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

This permit was requested by Glanbia to ensure conditions are in place such that compliance with the permit reasonably assures compliance with all applicable air quality standards. The facility's existing permit, PTC No. 063-00003, was issued August 27, 1992, and revised June 6, 1994, June 9, 1995, and May 7, 2000. The terms and conditions of the PTC are incorporated in this facility-wide permit.

4.1 Application Chronology

October 22, 2004	Glanbia, Inc. applies for Permit to Construct exemption for four whey dryers.
December 12, 2004	Glanbia, Inc. withdraws the whey dryer Permit to Construct exemption request.
June 14, 2005	Glanbia, Inc. applies for a Tier II permit.
August 16, 2005	The Tier II permit application is determined complete.
September 20, 2005	Draft permit is sent to facility.
November 30, 2005	DEQ issues proposed permit for public comment
December 16, 2005 – January 16, 2006	Public comment

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this Tier II permit.

5.1 Equipment Listing

Table 5.1 EQUIPMENT LISTING

Permit Section	Source Description	Emissions Controls
3	Boiler Cleaver Brooks model CB-200-600-160 25.13 MMBtu/hr Burner type: horizontal Stack gas flow rate: 8,006 acfm @ 370 °F Fuel: propane	None
3	Boiler Kewanee Classic III model H3S-600G02 25.13 MMBtu/hr Burner type: horizontal Stack gas flow rate: 8,006 acfm @ 370 °F Fuel: propane	None
4	Baghouse Dryer Units Blau Knox baghouse dryer Uses boiler steam for drying 300 lb/hr maximum dry solids production Baghouse exhaust rate: 10,000 acfm @ 248 °F Niro 50 baghouse dryer Uses boiler steam for drying 150 lb/hr maximum dry solids production Baghouse exhaust rate: 2,500 acfm @ 167 °F Niro 125 (Provon dryer) baghouse dryer Uses boiler steam for drying 600 lb/hr maximum dry solids production Baghouse exhaust rate: 6,500 acfm @ 167 °F Niro model SD-6.3-N "R & D" electric baghouse dryer 20 lb/hr maximum dry solids production Baghouse exhaust rate: 415 acfm @ 167 °F Phoenix propane fired baghouse dryer 8 MMBtu/hr maximum heat input 2000 lb/hr maximum dry solids production Burner exhaust rate: 1,872 acfm @ 248 °F Baghouse exhaust rate: 16,000 acfm @ 167 °F	None
5	Conveyor baghouses Turbotron TBT-600-AB/RU Conveyor: Niro 125 line to bin 700 lb/hr maximum dry solids input Baghouse exhaust rate: 400 acfm @ 167 °F Turbotron TB010RA 15CK Conveyor: Phoenix line to bin 1200 lb/hr maximum dry solids input Baghouse exhaust rate: 400 acfm @ 167 °F New York Blower Co. F-5762-140 Conveyor: Phoenix line to receiver 1200 lb/hr maximum solids input Baghouse exhaust rate: 800 acfm @ 167 °F	None

Permit Section	Source Description	Emissions Controls
5	Unknown manufacturer Conveyor: Niro 50 line to receiver 250 lb/hr maximum solids input Baghouse exhaust rate: 800 acfm @ 167 °F New York Blower Co. 2106 Conveyor: Blau Knox line to D50 receiver 250 lb/hr maximum solids input Baghouse exhaust rate: 500 acfm @ 167 °F Abb Richardson PPHVD Conveyor: Blau Knox line to D7 receiver 350 lb/hr maximum solids input Baghouse exhaust rate: 800 acfm @ 167 °F	None
	Miscellaneous sources not regulated by this permit: 1. Propane vaporizers[1]: • Ransome 0.91 MMBtu/hr • Ransome 0.91 MMBtu/hr • Samdick 0.55 MMBtu/hr 2. Indoor air (quality control) 3. Building heaters: • Eight building heaters • All heaters are less than 0.25 MMBtu/hr • All heaters are propane fired	1. None 2. New York Burner Co. nuisance dust baghouse 540 acfm @ 77 °F PM_{10} emissions 0.001 lb/hr; 0.004 T/yr Lamsen vacuum baghouse 800 acfm @ 77 °F PM_{10} emissions 0.001 lb/hr; 0.004 T/yr 3. None

[1] propane vaporizers are used for cold weather priming of the propane fuel prior to firing in the boilers.

5.2 *Emissions Inventory*

Table 5.2 is a summary of Glanbia Richfield emissions. These emissions represent Potential to Emit, or full time operations at maximum production capacity. A detailed emissions inventory is included as Appendix B.

TABLE 5.2 EMISSION INVENTORY SUMMARY

Equipment Type	Equipment Name	Emission Rate (ton/year)						
		PM	PM_{10}	NOx	SO_2	CO	VOC	Lead
Baghouse-Dryer	Blau Knox	0.13	0.13	-	-	-	-	-
Baghouse-Dryer	Niro 125	0.26	0.26	-	-	-	-	-
Baghouse-Dryer	Niro 50	0.07	0.07	-	-	-	-	-
Baghouse-Dryer	Niro - R&D Dryer	0.01	0.01	-	-	-	-	-
Baghouse-Dryer	Phoenix	0.88	0.88	-	-	-	-	-
Baghouse-Conveyor	Niro 125	0.03	0.03	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.53	0.53	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.53	0.53	-	-	-	-	-
Baghouse-Conveyor	Niro 50	0.11	0.11	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.11	0.11	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.15	0.15	-	-	-	-	-
Baghouse	Nuisance Dust	0.00	0.00	-	-	-	-	-
Baghouse	Lamsen Vacuum	0.00	0.00	-	-	-	-	-
Boiler	Cleaver Brooks	0.73	0.73	23.11	1.91	3.89	0.36	
Boiler	Kewanee Classic III	0.73	0.73	23.11	1.91	3.89	0.36	
Dryer element	Phoenix	0.15	0.15	5.36	0.60	0.73	0.11	-
Heater - On Ground	Milling Room	0.003	0.003	0.101	0.011	0.014	0.002	-
Heater - Roof Mounted	Chemical Room	0.008	0.008	0.268	0.030	0.036	0.006	-
Heater - Roof Mounted	Provon T-3 Room	0.005	0.005	0.168	0.019	0.023	0.004	-
Heater - Roof Mounted	Alcove Room	0.002	0.002	0.056	0.006	0.008	0.001	-
Heater - Roof Mounted	Alcove Room	0.003	0.003	0.090	0.010	0.012	0.002	-
Heater - Roof Mounted	Milling Compr Rm	0.002	0.002	0.084	0.009	0.011	0.002	-
Heater - Roof Mounted	Office/Conference	0.003	0.003	0.094	0.011	0.013	0.002	-
Heater - Roof Mounted	Packaging Room	0.004	0.004	0.137	0.015	0.019	0.003	-
Propane Vaporizer	Vaporizer - Ransome	0.017	0.017	0.610	0.068	0.083	0.013	-
Propane Vaporizer	Vaporizer - Ransome	0.017	0.017	0.610	0.068	0.083	0.013	-
Propane Vaporizer	Vaporizer - SamDick	0.011	0.011	0.369	0.041	0.050	0.008	-
TOTALS		4.49	4.49	54.16	4.71	8.86	0.90	0.00

5.3 Modeling

DEQ's modeling memorandum is presented as Appendix C.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this facility-wide permit.

IDAPA 58.01.01.400..... Procedures and Requirements for Tier II Operating Permits

This facility is required to obtain this permit to protect ambient air quality standards by limiting the facility's Potential to Emit. Permit to Construct requirements have not been triggered; therefore, this section addresses only those requirements that apply to Tier II permits.

40 CFR 60 Subpart Dc ..... Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units

Both boilers at Glanbia Richfield are subject to NSPS Subpart Dc. At the time of this memo, requirements for propane fired boilers are limited to recordkeeping and reporting. Specifically, the boiler fuel use must be recorded daily and reported to EPA. On September 13, 2005, the EPA granted Glanbia's request to reduce fuel usage recordkeeping requirements from daily to monthly, and to allow one gas meter to record monthly propane usage for both boilers. A copy of the EPA approval is included as Appendix D.

All NSPS sources are also subject to the requirements of NSPS Subpart A, *General Provisions*. Section 7 of Subpart A, *Notification and Recordkeeping* is cited in the permit to call attention to:

- A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies...; and,
- Any owner or operator subject to the provisions of this part shall maintain a file of all measurements, including ...performance testing measurements...and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance ... *etc.*

5.5 Fee Review

Table 5.3 is the Glanbia Richfield Tier II processing fee. The $5,000 applies to facilities with permitted emissions of 10 to less than 100 tons per year. The processing fee will be assessed upon issuance of the final permit.

Table 5.3 TIER II PROCESSING FEE SUMMARY

Emissions Inventory	
Pollutant	**Permitted Emissions**
NO_X	54.16
SO_2	4.71
CO	8.86
PM_{10}	4.49
VOC	0.90
TAPS/HAPS	0.0
Total:	73.12
Fee Due	**$ 5,000.00**

5.6 Regional Review of Draft Permit

The draft permit was made available to DEQ's Twin Falls Regional Office September 20, 2005. Comments have been incorporated into the permit.

5.7 Facility Review of Draft Permit

The draft permit was made available to Glanbia, Inc. September 20, 2005. Comments have been incorporated into the permit.

6. PERMIT CONDITIONS

Permit Section 2: FACILITY-WIDE CONDITIONS

Permit Condition 2.4 establishes the requirement for quarterly facility-wide fugitive emissions inspections.

Permit Condition 2.8 establishes the requirement for quarterly facility-wide visible emissions inspections.

Permit Section 3: CLEAVER BROOKS AND KEWANEE BOILERS

Permit Condition 3.3, *Emission Limits*, updated the emission limits for the boilers based on EPA data for propane combustion. At maximum operating capacity, modeled emissions from the boilers do not cause or contribute to a violation of any air quality standard. NO_x is the facility's most limiting pollutant, and is therefore specifically limited to establish the facility's Potential to Emit. Permit Condition 3.3 also restates the Facility-Wide Condition 2.15 *Fuel Burning Equipment* grain loading standard for gas fired burners.

Permit Condition 3.5, *Fuel Usage*, establishes propane as the only allowable fuel. The boilers had previously been allowed to burn No. 2 fuel oil.

Permit Condition 3.6, *New Source Performance Standards: 40 CFR 60 Subpart Dc,* states the subpart applicability and the reporting and recordkeeping requirements of 60.48(c). On September 13, 2005, the EPA granted Glanbia's request to reduce fuel usage recordkeeping requirements from daily to monthly, and to allow one gas meter to record monthly propane usage for both boilers. A copy of the EPA approval is included as Appendix D.

Permit Condition 3.6 also serves to remind the facility of NSPS Subpart A applicability, particularly the *Notification and Recordkeeping* section, 40 CFR 60.7.

Permit Section 4: WHEY DRYERS

The baghouse dryers dry the whey with air heated by boiler steam, electricity, or propane. The Phoenix baghouse dryer is the only dryer with a self contained combustion heat source – an 8 MMBtu/hr propane burner.

Permit Condition 4.3, *Combustion Emissions – Phoenix Baghouse Dryer*, limits the particulate matter emissions from the Phoenix burner to the state standard for gas fired burners.

Permit Condition 4.5, *Operation and Maintenance Manual*, establishes the requirement for an O&M manual for the baghouses.

Permit Condition 4.6, *Baghouse Filter Bag Requirements*, establishes a minimum 99.99% PM_{10} efficiency for the baghouse filter bags – the collection efficiency claimed by Glanbia Richfield, and used to calculate the facility emissions.

Permit Condition 4.7, *Pressure Drop Monitoring Device*, requires pressure drop instrumentation on all the baghouse dryers.

Permit Condition 4.8, *Baghouse Pressure Drop* requires the baghouses do be operated within the manufacturer's recommended range.

Permit Condition 4.9, *Phoenix Baghouse Dryer Fuel*, limits the Phoenix dryer to propane fuel only.

Permit Condition 4.10, *Monitoring Requirement*, establishes the requirement for weekly pressure drop monitoring and recordkeeping for the baghouse dryers.

Permit Section 5: CONVEYOR BAGHOUSES

The conveyor baghouses are considered product recovery devices, and therefore are not considered air pollution control devices.

Permit Condition 5.4, *Operation and Maintenance Manual*, establishes the requirement for an O&M manual for the baghouses.

Permit Condition 5.5, *Baghouse Filter Bag Requirements*, establishes a minimum 99.99% PM_{10} efficiency for the baghouse filter bags – the collection efficiency claimed by Glanbia Richfield, and used to calculate the facility emissions.

Permit Condition 5.6, *Pressure Drop Monitoring Device*, requires pressure drop instrumentation on all the baghouse dryers.

Permit Condition 5.7, *Baghouse Pressure Drop* requires the baghouses do be operated within the manufacturer's recommended range.

Permit Condition 5.8, *Monitoring Requirement*, establishes the requirement for weekly pressure drop monitoring and recordkeeping for the conveyor baghouses.

7. PUBLIC COMMENT

In accordance with IDAPA 58.01.01.404.01.c and .209.01.c, a public comment period was provided on the proposed Tier II operating permit and PTC from December 16, 2005, to January 16, 2006. Comments regarding DEQ's proposed action were not provided.

8. RECOMMENDATION

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue final Tier II Operating Permit and PTC No. T2-050413 to Glanbia Foods, Inc., in Richfield, Idaho.

ZK/bf Permit No. T2-050413

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Appendix A

AIRS Information

T2-050413

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Glanbia Foods, Incorporated
Facility Location: Richfield, Idaho
AIRS Number: 063-00003

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B		B					U
NO_x	B							U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B		B					U
VOC	B							U
THAP (Total HAPs)	B							U
			APPLICABLE SUBPART					
			Dc					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

T2-050413

Equipment Type	Equipment Name	Emission Rate (ton/year)						
		PM	PM_{10}	NOx	SO_2	CO	VOC	Lead
Baghouse-Dryer	Blau Knox	0.13	0.13	-	-	-	-	-
Baghouse-Dryer	Niro 125	0.26	0.26	-	-	-	-	-
Baghouse-Dryer	Niro 50	0.07	0.07	-	-	-	-	-
Baghouse-Dryer	Niro - R&D Dryer	0.01	0.01	-	-	-	-	-
Baghouse-Dryer	Phoenix	0.88	0.88	-	-	-	-	-
Baghouse-Conveyor	Niro 125	0.03	0.03	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.53	0.53	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.53	0.53	-	-	-	-	-
Baghouse-Conveyor	Niro 50	0.11	0.11	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.11	0.11	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.15	0.15	-	-	-	-	-
Baghouse	Nuisance Dust	0.00	0.00	-	-	-	-	-
Baghouse	Lamsen Vacuum	0.00	0.00	-	-	-	-	-
Boiler	Cleaver Brooks	0.73	0.73	23.11	1.91	3.89	0.36	
Boiler	Kewanee Classic III	0.73	0.73	23.11	1.91	3.89	0.36	
Dryer element	Phoenix	0.15	0.15	5.36	0.60	0.73	0.11	-
Heater - On Ground	Milling Room	0.003	0.003	0.101	0.011	0.014	0.002	-
Heater - Roof Mounted	Chemical Room	0.008	0.008	0.268	0.030	0.036	0.006	-
Heater - Roof Mounted	Provon T-3 Room	0.005	0.005	0.168	0.019	0.023	0.004	-
Heater - Roof Mounted	Alcove Room	0.002	0.002	0.056	0.006	0.008	0.001	-
Heater - Roof Mounted	Alcove Room	0.003	0.003	0.090	0.010	0.012	0.002	-
Heater - Roof Mounted	Milling Compr Rm	0.002	0.002	0.084	0.009	0.011	0.002	-
Heater - Roof Mounted	Office/Conference	0.003	0.003	0.094	0.011	0.013	0.002	-
Heater - Roof Mounted	Packaging Room	0.004	0.004	0.137	0.015	0.019	0.003	-
Propane Vaporizer	Vaporizer - Ransome	0.017	0.017	0.610	0.068	0.083	0.013	-
Propane Vaporizer	Vaporizer - Ransome	0.017	0.017	0.610	0.068	0.083	0.013	-
Propane Vaporizer	Vaporizer - SamDick	0.011	0.011	0.369	0.041	0.050	0.008	-
TOTALS		4.49	4.49	54.16	4.71	8.86	0.90	0.00

Equipment Type	Equipment Name	Emission Rate (lb/hr)						
		PM	PM_{10}	NOx	SO_2	CO	VOC	Lead
Baghouse-Dryer	Blau Knox	0.03	0.03	-	-	-	-	-
Baghouse-Dryer	Niro 125	0.06	0.06	-	-	-	-	-
Baghouse-Dryer	Niro 50	0.01	0.01	-	-	-	-	-
Baghouse-Dryer	Niro - R&D Dryer	0.00	0.00	-	-	-	-	-
Baghouse-Dryer	Phoenix	0.20	0.20	-	-	-	-	-
Baghouse-Conveyor	Niro 125	0.01	0.01	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.12	0.12	-	-	-	-	-
Baghouse-Conveyor	Phoenix	0.12	0.12	-	-	-	-	-
Baghouse-Conveyor	Niro 50	0.03	0.03	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.03	0.03	-	-	-	-	-
Baghouse-Conveyor	Blau Knox	0.04	0.04	-	-	-	-	-
Baghouse	Nuisance Dust	0.00	0.00	-	-	-	-	-
Baghouse	Lamsen Vacuum	0.00	0.00	-	-	-	-	-
Boiler	Cleaver Brooks	0.17	0.17	5.28	0.44	0.89	0.08	
Boiler	Kewanee Classic III	0.17	0.17	5.28	0.44	0.89	0.08	
Dryer element	Phoenix	0.03	0.03	1.22	0.14	0.17	0.03	-
Heater - On Ground	Milling Room	0.001	0.001	0.023	0.003	0.003	0.000	-
Heater - Roof Mounted	Chemical Room	0.002	0.002	0.061	0.007	0.008	0.001	-
Heater - Roof Mounted	Provon T-3 Room	0.001	0.001	0.038	0.004	0.005	0.001	-
Heater - Roof Mounted	Alcove Room	0.000	0.000	0.013	0.001	0.002	0.000	-
Heater - Roof Mounted	Alcove Room	0.001	0.001	0.021	0.002	0.003	0.000	-
Heater - Roof Mounted	Milling Compr Rm	0.001	0.001	0.019	0.002	0.003	0.000	-
Heater - Roof Mounted	Office/Conference	0.001	0.001	0.021	0.002	0.003	0.000	-
Heater - Roof Mounted	Packaging Room	0.001	0.001	0.031	0.004	0.004	0.001	-
Propane Vaporizer	Vaporizer - Ransome	0.004	0.004	0.139	0.016	0.019	0.003	-
Propane Vaporizer	Vaporizer - Ransome	0.004	0.004	0.139	0.016	0.019	0.003	-
Propane Vaporizer	Vaporizer - SamDick	0.002	0.002	0.084	0.009	0.011	0.002	-
TOTALS		1.03	1.03	12.37	1.08	2.02	0.21	0.00

Glanbia Foods Inc., Richfield Idaho Facility
Boiler Potential to Emit Calculations

Assumptions

Fuel and Hours Allocation		
Unit	Cleaver Brooks Boiler	Kewanee Classic III Boiler
Boiler Heat Input Rating (MM Btu/hr)	25.13	25.13
Theoretical Max Propane Usage[a] (gal/yr)	2,432,473	2,432,473
Potential Hours on Propane (hr/yr)	8,760	8,760

Criteria Pollutants

Pollutant	EF	Cleaver Brooks Boiler			Kewanee Classic III Boiler		
	(lb/1000 gal)[b]	(lb/hr)	(lb/yr)	(ton/yr)	(lb/hr)	(lb/yr)	(ton/yr)
PM	0.6	0.17	1,459.5	0.73	0.17	1,459.5	0.73
SO_2[c]	1.57	0.436	3,819.0	1.91	0.436	3,819.0	1.91
NOx	19	5.28	46,217.0	23.11	5.28	46,217.0	23.11
CO	3.2	0.89	7,783.9	3.89	0.89	7,783.9	3.89
VOC[d]	0.3	0.08	729.7	0.36	0.08	729.7	0.36

[a] Propane heat value of 90,500 Btu/gal, EPA AP-42, Section 1.5.1 (Air CHIEF 2004)

[b] Propane emission factors from EPA AP-42, Section 1.5 Liquefied Gas Combustion, Table 1.5-1, (Air CHIEF 2004)
Propane conversion to lb/MMBtu, divide by a heating values of 90,500 gal

[c] See calculation sheet for SO_2 emission factor.

[d] VOCs based on non-methane total organic compounds

Glanbia Foods Inc., Richfield Idaho Facility

Baghouse Potential to Emit Calculations

Equipment Type	Equipment Name	Baghouse Type	Date Installed	Dry Solids Output (lb/hr)	Cyclone Upstream of Baghouse	Calculated Throughput to Baghouse[a]	Baghouse PM Fractional Efficiency[b]	PM[b] Emissions (lb/hr)	PM Emissions (tpy)	IDAPA Exemptions
Baghouse-Dryer	Blau Knox	Polyester membrane	1972	300	No	300.0	99.99	0.030	0.13	NA[c]
Baghouse-Dryer	Niro 125 (Provon Dryer)	P-84 membrane	1996	600	No	600.0	99.99	0.060	0.26	58.01.01.221.01
Baghouse-Dryer	Niro 50	P-84 membrane	1994	150	No	150.0	99.99	0.0150	0.07	58.01.01.220-221.01, IDEQ 11-16-94
Baghouse-Dryer	Niro - R&D Dryer	Polyester membrane	2004	20	No	20.0	99.99	0.002	0.01	58.01.01.221.01
Baghouse-Dryer	Phoenix	Polyester membrane	1990	2,000	No	2000.0	99.99	0.20	0.88	NA[c]
Baghouse-Conveyor	Niro 125 (Provon) - Conveying line to Bin	Polyester membrane	1996	700	Yes	70.0	99.99	0.0070	0.03	NA[c]
Baghouse-Conveyor	Phoenix (WPC) - Conveying line to Bin	Polyester membrane	1989	1,200	No	1200.0	99.99	0.1200	0.53	NA[c]
Baghouse-Conveyor	Phoenix (WPC) - Conveying line to Receiver	Polyester membrane	1989	1,200	No	1200.0	99.99	0.1200	0.53	NA[c]
Baghouse-Conveyor	Niro 50 - Conveying Line to Receiver	Polyester membrane	1999	250	No	250.0	99.99	0.0250	0.11	58.01.01.221.01
Baghouse-Conveyor	Blau Knox - Conveying Line to D50 Receiver (Calcium)	Polyester membrane	2003	250	No	250.0	99.99	0.0250	0.11	58.01.01.221.01
Baghouse-Conveyor	Blau Knox - Conveying Line to D7 Receiver (Calcium)	Polyester membrane	2004	350	No	350.0	99.99	0.0350	0.15	58.01.01.221.01
Baghouse	Nuisance Dust Collector	Polyester membrane	1990	10	No	10.0	99.99	0.0010	0.004	NA[c]
Baghouse	Lamsen Vacuum system	Polyester membrane	2002	10	No	10.0	99.99	0.0010	0.004	58.01.01.221.01
PTE Totals									2.81	

Cyclone Efficiency (%): 90

Notes:

[a] *Throughput to baghouse = (1-CE/100)x100x(Dry Solids Output)/ (CE +BE*(100-CE)), where CE and BE are collection efficiencies for cyclone and baghouse, respectively.*

[b] *Efficiencies provided by bag supplier, Bay Area Industrial Filtration*

[c] *PM is assumed to equal to particulate matter less than 10 microns in diameter (PM_{10})*

[d] *Not Applicable (NA) based on date installed or over the 1.5 tpy emission estimate.*

Appendix C

Modeling Review

T2-050413

MEMORANDUM

DATE: November 21, 2005

TO: Charlie Mazzone, Permit Writer, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT NUMBER: T2-050413

SUBJECT: Modeling Review for the Glanbia Foods, Inc. Tier II Operating Permit Application for their facility near Richfield, Idaho.

1.0 SUMMARY

Glanbia Foods, Inc. (Glanbia) submitted a Tier II Operating Permit application for their whey processing facility located near Richfield, Idaho. Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were submitted in support of a permit application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.403.02).

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility were below significant contribution levels (SCLs); or b) that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Modeled impacts are well below applicable air quality standards.	Unique permit provisions are not necessary to assure compliance with air quality standards.
Propane-fired boilers were modeled assuming 8,760 hr/yr operation at maximum rates.	Daily fuel use monitoring of the boilers is not necessary for the protection of short-term air quality standards, since compliance with standards was based on modeling of maximum potential emissions rates.

2.0 BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The Glanbia facility is located in Lincoln County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.91, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.403.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

a. IDAPA 58.01.01.006.91
b. Micrograms per cubic meter
c. IDAPA 58.01.01.577 for criteria pollutants
d. The maximum 1st highest modeled value is always used for significant impact analysis
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
f. Never expected to be exceeded in any calendar year
g. Concentration at any modeled receptor
h. Never expected to be exceeded more than once in any calendar year
i. Concentration at any modeled receptor when using five years of meteorological data
j. Not to be exceeded more than once per year

2.2 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations used in these analyses are listed in Table 3. Monitoring data collected from Rupert, Idaho, were used for background PM_{10} data. Rural/agricultural default values were used for background concentrations of other criteria pollutants.

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling.* Memorandum to Mary Anderson, March 14, 2003.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	76
	annual	27
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO_2)	3-hour	34
	24-hour	26
	Annual	8
Nitrogen dioxide (NO_2)	Annual	17

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

3.0 MODELING IMPACT ASSESSMENT

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used in analyses submitted by Glanbia. CH2M Hill (CH2M), Glanbia's consultant, performed the air quality analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Additional Description
Model	ISCST3	ISCST3 version 04272.
Meteorological data	1987-1991	Boise surface and upper air data
Terrain	Considered	Elevation data from digital elevation model (DEM) files
Building downwash	Considered	The building profile input program (BPIP) was used
Receptor grid	Grid 1	25-meter spacing along boundary
	Grid 2	100-meter spacing out to 1,000 meters
	Grid 3	500-meter spacing out to 5,000 meters

3.1.1 Modeling Protocol

A protocol was submitted to DEQ prior to submission of the application. Modeling was conducted using methods and data proposed in the protocol and those presented in the State of Idaho Air Quality Modeling Guideline.

3.1.2 Model Selection

ISCST3 was used by CH2M to conduct the ambient air analyses. ISCST3 is adequate for the characteristics of the facility and the site to account for the influence of nearby terrain and building downwash. Verification modeling was conducted using ISC-PRIME to better account for downwash. ISC-PRIME utilizes the PRIME downwash algorithm. PRIME is superior to the downwash algorithm in ISCST3 and is included in AERMOD, the recently promulgated replacement model for ISCST3.

3.1.3 Meteorological Data

Site-specific meteorological data are not available for the proposed facility site in Richfield. Boise airport is the closest area where model-ready surface meteorological data are available. These data were used in the modeling analyses.

PCRAMMET, the meteorological data preprocessor for ISCST-3, occasionally generates unrealistically low mixing heights as a result of interpolation algorithms used with the twice daily measured mixing heights. DEQ verification modeling was conducted using meteorological data corrected for low mixing heights. All mixing height values below 50 meters were replaced with a value of 50 meters. Meteorological files were not submitted with the application; therefore, it is uncertain whether CH2M adjusted the data for low mixing heights.

3.1.4 Terrain Effects

The modeling analyses submitted considered elevated terrain, with elevations obtained from USGS digital elevation model (DEM) files. Elevations of terrain were not thoroughly reviewed by DEQ since review of a topographic map indicates the area is nearly flat for dispersion modeling purposes, especially considering that maximum impacts are located very near the emission sources.

3.1.5 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the modeling input to a facility plot plan submitted with the application and aerial photographs of the area.

3.1.6 Building Downwash

Plume downwash effects caused by structures proposed for the facility were accounted for in the modeling analyses. The Building Profile Input Program (BPIP) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for ISC.

3.1.7 Ambient Air Boundary

The property boundary was used as the ambient air boundary for the modeling analyses submitted by CH2M. Although the boundary is not fenced, the application indicated the property would be posted with no trespassing signs. DEQ determined these measures are adequate to preclude public access to the facility.

3.1.8 Receptor Network

The receptor grids used by CH2M met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ was not confident the receptor grid was sufficiently dense to resolve the maximum-modeled concentrations; however, since modeled results were well below applicable standards, DEQ determined the grid was adequate to confidently assure compliance with standards.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application, the engineering technical memorandum, and the proposed permit. The following approach was used for DEQ verification modeling:

- All modeled emissions rates were equal to or greater than the facility's emissions calculated in the PTC application or the permitted allowable rate.
- More extensive review of modeling parameters selected was conducted when model results for specific sources approached applicable thresholds.

Table 5 lists emissions rates for sources included in the dispersion modeling analyses. CO was not included in the modeling analyses because total facility-wide emissions were below the DEQ modeling applicability thresholds.

Table 5. MODELED EMISSIONS RATES

Source Id	Description	Emission Rates (lb/hr)[a]			
		PM_{10}[b]	SO_2[c]	CO[d]	NO_x[e]
BD1	Blau Knox Baghouse Dryer	0.030			
BD2	Niro 50 Baghouse Dryer	0.0150			
BD3	Niro 135 Baghouse Dryer	0.060			
BD4	Niro – R&D Baghouse Dryer	0.0020			
BD5	Phoenix Baghouse Dryer	0.20			
DE6	Phoenix – Indirect Fired Dryer Element	0.035	0.137	0.166	1.22
PV7	Ransome Propane Vaporizer	0.00398	0.0156	0.0189	0.00298
PV8	Ransome Propane Vaporizer	0.00398	0.0156	0.0189	0.00298
PV9	SamDick Propane Vaporizer	0.00240	0.00944	0.0114	0.00180
BC10A	Niro 125 Baghouse Conveyor	0.0070			
BC10B	Phoenix Baghouse Conveyor	0.120			
BC11	Phoenix line to Receiver Baghouse Conveyor	0.120			
BC12	Niro 50 line to Receiver Baghouse Conveyor	0.0250			
BC13	Blau Knox to D7 Receiver Baghouse Conveyor	0.0350			
BH14	Nuisance Dust Collector Baghouse	0.00100			
BH15	Lamsen Vacuum System Baghouse	0.00100			
BC16	Blau Knox to D50 Receiver Baghouse Conveyor	0.0250			
B17	Cleaver Brooks Boiler	0.167	0.436	0.889	5.28
B18	Kewanee Classic III Boiler	0.167	0.436	0.889	5.28

[a] Pounds per hour
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Sulfur dioxide
[d] Carbon monoxide
[e] Oxides of Nitrogen

3.3 *Emission Release Parameters*

Table 6 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity. Values used in the analyses appeared reasonable and within expected ranges. Additional documentation /verification of these parameters were not required.

Table 6. EMISSIONS AND STACK PARAMETERS

Release Point /Location	Source Type	Stack Height (m)[a]	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
BD1	Point	10.1	0.48	348.2	25.91
BD2	Point	11.3	0.3	348.2	16.17
BD3	Point	16.2	0.51	348.2	15.07
BD4	Point	5.8	0.1	348.2	24.21
BD5	Point	20.3	0.76	348.2	16.56
DE6	Point	19.8	0.36	393.2	8.91
PV7	Point	1.9	0.2	505.4	5.27
PV8	Point	1.9	0.2	505.4	5.27
PV9	Point	2.1	0.15	505.4	5.74
BC10A	Point	20.3	0.15	348.2	10.35
BC10B	Point	20.3	0.15	348.2	10.35
BC11	Point	20	0.15	348.2	20.7
BC12	Point	19.2	0.15	348.2	12.94
BC13	Point	19.8	0.2	348.2	11.67
BH14	Point	6.9	0.2	298.2	0.001
BH15	Point	3.5	0.15	298.2	0.001
BC16	Point	4.3	0.15	348.2	0.001
B17	Point	13.1	0.61	461	10.7
B18	Point	9.8	0.67	461	10.7

[a] Meters
[b] Kelvin
[c] Meters per second

3.4 *Results for Significant and Full Impact Analyses*

Results of the significant impact analyses are presented in Table 7 for both CH2M's analyses and DEQ's verification analyses. CH2M used ISCST3 and DEQ used ISC-PRIME to better assess plume downwash affects caused by structures at the proposed facility. Differences between the two analyses were inconsequential.

Table 7. RESULTS OF SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration[a] ($\mu g/m^3$)[b]	SCL[c] ($\mu g/m^3$)	Full Impact Analysis Required?
PM_{10}[d]	24-hour	18.1 (18.1)	5.0	Yes
	Annual	5.58 (4.84)	1.0	Yes
Sulfur dioxide (SO_2)	3-hour	26.5 (26.4)	25	Yes
	24-hour	14.1 (14.1)	5	Yes
	Annual	4.5 (3.8)	1.0	Yes
Nitrogen dioxide (NO_2)[e]	Annual	47.4 (42.9)	1.0	Yes

[a] Values in parentheses are those obtained by CH2M
[b] Micrograms per cubic meter
[c] Significant contribution levels
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[e] Assumes 100% of NO_x is NO_2

Table 8 shows results of the full impact analyses. All modeled concentrations, for both CH2M's analyses and DEQ's verification analyses, are well below applicable air quality standards.

Table 8. RESULTS OF FULL IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration[a] ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[d]	24-hour	16.0[e] (18.1)[f]	76	92 (94)	150	61 (63)
	Annual	5.58[f] (4.84)[f]	27	33 (32)	50	65 (64)
Sulfur dioxide (SO_2)	3-hour	25.6[g] (26.4)[f]	34	60 (60)	1,300	5 (5)
	24-hour	13.9[g] (14.1)[f]	26	40 (40)	365	11 (11)
	Annual	4.5[f] (3.8)[f]	8	12 (12)	80	16 (16)
Nitrogen dioxide (NO_2)[h]	Annual	47.4[f] (42.9)[f]	17	64 (60)	100	64 (60)

[a] Values in parentheses are those obtained by CH2M
[b] Micrograms per cubic meter
[c] National ambient air quality standards
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[e] Maximum of all 6th high concentrations at each receptor
[f] Maximum of all 1st high concentrations at each receptor
[g] Maximum of all 2nd high concentrations at each receptor
[h] Assumes 100% of NO_x is NO_2

4.0 CONCLUSIONS

The ambient air impact analysis submitted, in combination with DEQ's verification analyses, demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any air quality standard.

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Appendix D

EPA Custom Monitoring Agreement
Kewanee and Cleaver Brooks Boilers

T2-050413

UNIT' :TATES ENVIRONMENTAL PROTECTIC GENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

Reply To
Attn Of: AWT - 107

13 SEP 2005

Mr. Todd J. Hughes
Environmental Manager
Glanbia Foods Inc.
1728 South 2300 East
Gooding, Idaho 83330

Re: NSPS Subpart Dc Reduction in Fuel Use Record-keeping Request

Dear Mr. Hughes:

This alternative fuel monitoring determination is in response to a request sent to the Environmental Protection Agency (EPA) by Glanbia Foods Inc. (Glanbia) dated June 13, 2005. In this request, it is stated that Glanbia intends to maintain and operate two 25.13 MMBTU/hr boilers, located at their facility in Richfield, Idaho, fueled by propane exclusively. Boiler 1 is a Kewwanee Classic III installed in May of 1992. Boiler 2 is a Cleaver Brooks installed in April of 1995. Therefore, these boilers are affected facilities subject to 40 CFR 60 Subpart Dc "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units" (Subpart Dc) and also subject to certain general requirements of 40 CFR 60 Subpart A.

EPA approves the request from Glanbia for a reduction in the fuel usage record-keeping requirement in 40 CFR §60.48c of Subpart Dc from daily to monthly. EPA also approves the use of one gas meter to record monthly propane usage for both boilers as follows.

Background

Glanbia has requested to reduce the record-keeping requirement of 40 CFR §60.48c. Under this section owners or operators of each affected facility are required to record and maintain records of the amounts of each fuel combusted during each day.

Glanbia requests approval to record the amount of each fuel combusted in Boilers 1 and 2 during each month instead of during each day as required by Subpart Dc. Glanbia proposes to have one gas meter for Boilers 1 and 2 that will measure the total propane usage per month. There is no secondary fuel use in these boilers. When more than one boiler is firing propane simultaneously, they will divide each boiler design heat input capacity by the total of the design heat input capacities of each boiler, and use this to prorate the natural gas usage of each boiler on a monthly basis. EPA determines that this will adequately determine the fuel usage by each boiler.

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Basis for approval

The approval for the reduction in the record keeping to monthly instead of daily is based on a memorandum dated February 20, 1992, from the EPA Office of Air Quality Planning and Standards which states that there is little value in requiring daily record-keeping of the amounts of fuel combusted for an affected unit that fires only natural gas or natural gas with clean low-sulfur fuel oil (sulfur content less than 0.5%) as a backup. EPA has approved requests for such units to maintain monthly, instead of daily, fuel records. As defined in the currently accepted definition of natural gas, from the Acid Rain Program, in 40 CFR Part 72, *Natural gas* means a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane).

Therefore your request has been approved. If you have any further questions or concerns, please contact Heather Valdez of the Region 10 Office of Air, Waste and Toxics at (206) 553-6220 or valdez.heather@epa.gov.

Sincerely,

Jeff KenKnight, Manager
Federal and Delegated Air Programs Unit
Office of Air, Waste and Toxics

cc: Bill Rogers, Idaho Department of Environmental Quality, Boise
Stephen Van Zandt, Idaho Department of Environmental Quality, Twin Falls